

**Fossil Creek Stock Tank Survey: Coconino
National Forest, Arizona**

Final Report to:
U.S. Fish and Wildlife Service
110 South Church Avenue, Box 52
Tucson, Arizona 85701

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INTRODUCTION

In preparation for the planned decommission of the Childs and Irving power plants on Fossil Creek by Arizona Public Service (APS) we conducted a survey on all wetted stock tanks within the Fossil Creek drainage area. The upper section of Fossil Creek above the Irving plant retains a native fish community consisting of headwater chub (*Gila nigra*), longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys osculus*), desert sucker (*Pantosteus clarki*), Sonora sucker (*Catostomus insignis*), and roundtail chub (*Gila robusta*). A recent proposal to renovate upper Fossil Creek and stock tanks within the drainage basin to remove nonnative fishes promises to restore the watershed for native communities.

During periods of high rains or perhaps even snowmelt, stock tanks within the drainage area are capable of overflowing into Fossil Creek and transporting resident aquatic fauna in the process. Non-natives such as green sunfish (*Lepomis cyanellus*) that commonly reside in stock tanks can have a fatal effect on native fishes including those in Fossil Creek. Accordingly, we set out to find and identify all non-native aquatic vertebrates and crayfish in wetted stock tanks within the Fossil Creek drainage and offer preliminary assessment of the potential for these tanks to overflow.

METHODS

We sampled 48 stock tanks within the Fossil Creek drainage, above a proposed fish barrier site to be located approximately one mile south of Stehr Lake, between April and November 2003. Since many of these tanks dry during the summer months an aerial survey was conducted on June 27, 2002 to determine which tanks contained water, and thus the potential to support fish and other aquatic vertebrates as well as crayfish. At that time 65 of 127 tanks were dry, 48 tanks held water and 14 were of undetermined status. Of the 62 tanks that were either wet or undetermined, 48 drain into Fossil Creek upstream of the proposed fish barrier. These 48 stock tanks, therefore, were identified by the U.S. Fish and Wildlife Service as potential points of entry for non-native fishes and crayfish into Fossil Creek.

Depending on the conditions present at each individual tank a combination of the following sampling methods were employed: seining, gill nets, minnow traps, dip netting and visual observation. At least three of these methods were utilized at each tank and, in most cases, four or more were employed. Depending on the size of the tank, between one and three gill nets per site were employed as deemed necessary. Minnow traps were of the nylon mesh, collapsible variety and were baited with a half can of commercially available cat food. Typically between eight to ten minnow traps per site were set, depending on the size of the tank. In some cases, fewer or additional traps were necessary. Seining was performed during the day. The gill nets and minnow traps were set, left overnight and checked the following day. All fishes were identified and returned to the tank of capture. Collected amphibians, reptiles and crayfish were handled in the same manner. Environmental data including air temperature, water temperature, relative humidity and water pH were collected. Using the area calculation function available on

most GPS units, the water surface area of each tank was recorded as well as the maximum potential aquatic surface area. The maximum surface area was calculated by walking the high water along the tanks berm. Upon completing a circle around the tank, the GPS unit calculated the area within that circle. The ratio of actual surface area to maximum surface area was then calculated as an estimate for how full each tank was. Although this simple calculation does not take into account tank depth, the results provide a standardized numerical estimate for each tank that corresponds well with our general impression of each site. Digital photographs were taken at the majority of sites as a permanent visual record.

RESULTS

Five tanks were found to contain fishes. Tank # 010 contained bluegill (*Lepomis macrochirus*), tank # 018 contained goldfish (*Carassius auratus*) and tanks # 035, 085 and 087 contained green sunfish (*Lepomis cyanellus*). Seven tanks held crayfish (*Orconectes virilis*) (Table 1). Full data, photos and narratives on each tank are provided in the following individual summaries.

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Tank Number 005

Tank Location: Easting: 444425 Northing: 3810451

Elevation: 1723 meters

Date: 8/25/03 – 8/26/03

Start Time: 8/25/03 2:30 PM

End Time: 8/26/03 11:00 AM

Duration: 20.5 hours

Methods: Dip net, Gill net, Minnow Traps

Air Temperature: 24 C

Relative Humidity: 40%

Water Temperature: 22.3 C

PH: 7.60

Surface Area: 755 m²

Max Surface Area: 25550 m²

% Filled: 34%

Photograph #'s: 1881-1885

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: No aquatic vertebrates were found at this tank. One half of the wetted tank was shallow (~25 cm), the other half formed a much deeper bowl (~1.8 m) with a very steep gradient joining the two. The shallow portion was dip netted for approximately one half hour with the only catches being snails and leeches. One gill net was sufficient for the deeper bowl and was set in the afternoon and removed the following morning. Eight minnow traps, evenly spaced around the perimeter, were set and removed with the gill net. Tank # 005, located adjacent to the rim of Fossil Canyon, has very well defined inflow and outflow channels. The outflow channel is situated rather low on the retaining berm and, judging by its lack of vegetation and well defined nature, it appears this tank overflows with regularity. Tank 005 is accessible by a four-wheel drive vehicle, but its distance from Rt.260 and rough terrain would not make this tank an attractive stocking pond for fishermen. The surrounding vegetation consists mainly of one-seeded junipers, Utah junipers and paddle cactus.

Tank Number 008 (Natural Spring)

Tank Location: Easting: 447403 Northing: 3813633

Elevation: 1768 meters

Date: 9/25/03-9/26/03

Start Time: 9/25/03 12:00 PM

End Time: 9/26/03 10:00 AM

Duration: 22 hours

Methods: Seine, Gill net, Minnow Traps

Air Temperature: N.A.

Relative Humidity: N.A.

Water Temperature: 20.6 C

PH: 7.89

Surface Area: 508.17 m²

Max Surface Area: 949.32 m²

% Filled: 54%

Photograph #'s: 1946, 1947

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Common
Relative Abundance: 100%

Results/Comments: A total of five tiger salamander larvae (*Ambystoma tigrinum*) were found. Four via seining (Five complete passes through the tank) and one via the seven minnow traps evenly set along the perimeter. There was very little aquatic vegetation at this tank other than a few small, isolated clumps of grass along the waters edge. On a previous scouting visit (7/25/03) I noted that this tank was very close to drying up. Only ~ .3 meters of water remained at the deepest point. Additionally, Sean Blomquist of the Arizona Game and Fish Department (Technical Report 211, 2003) reported this tank completely dried at some point during 2002. The monsoon rains between 7/25/03 and 9/25/03 prevented Natural Spring Tank from drying this year. Tank 008 is accessible only by foot and is one of the few relatively natural tanks visited during this survey. It is surrounded on two sides by natural rock berms. The third side has been built up to presumably increase the amount of water capable of being held. Due to its relative inaccessibility and recent seasonal drying, this tank would make appear a poor habitat for introduced fish. However, the condition of the two outflow channels suggest this tank has experienced recent overflow. Any species introduced to this tank, therefore, would be very capable of leaving this tank via the overflow channels in the absence of a drying event.

Tank Number 009 (Gnat Tank)

Tank Location: Easting: 446775 Northing: 3814937

Elevation: 1772 meters

Date: 9/25/03-9/26/03

Start Time: 9/25/03 9:00 AM

End Time: 9/26/03 1:00 PM

Duration: 28 hours

Methods: Seine, Gill net, Minnow Traps

Air Temperature: 27.6 C

Relative Humidity: 38%

Water Temperature: 25.1 C

PH: 7.62

Surface Area: 1411.09 m²

Max Surface Area: 1763.86 m²

% Filled: 80%

Photograph #'s: 1948-1950

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Crayfish
Scientific Name: *Orconectes virilis*
Absolute Abundance: abundant
Relative Abundance: 100%

Results/Comments: Over 250 crayfish were captured within the ten evenly distributed minnow traps along the tank perimeter. Approximately 45 crayfish were captured during seining and six more were caught within the two gill nets strung across the tank. The water was very muddy with zero visibility. No aquatic vegetation was present. Gnat Tank is located within a very distinct wash surrounded by steep hills with, primarily, ponderosa pine, junipers and scattered gambel oaks. Judging by the erosion patterns, apparently large catchment area and well defined outflow channel, it appears this tank overflows with regularity. Sean Blomquist (AZGFD Technical Report 211) reported the presence of tiger salamanders at this tank as well.

Tank Number 010 (Divide Tank)

Tank Location: Easting: 443678 Northing: 3816146

Elevation: 1842 meters

Date: 8/4/03-8/5/03

Start Time: 8/4/03 12:00 PM

End Time: 8/5/03 10:30 AM

Duration: 22.5 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 31 C

Relative Humidity: 19%

Water Temperature: 25 C

PH: 9.6

Surface Area: 745.43 m²

Max Surface Area: 2097.55 m²

% Filled: 35.5%

Photograph #'s: 1859-1860

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Bluegill
Scientific Name: *Lepomis macrochirus*
Absolute Abundance: Common
Relative Abundance: 23.5% (35 individuals)
- 2) Common Name: Crayfish
Scientific Name: *Orconectes virilis*
Absolute Abundance: Abundant
Relative Abundance: 76.5% (114 individuals)

Results/Comments: All fish were small, between 1-2 inches long, and were captured with the 8 evenly distributed minnow traps. There were apparently no fish large enough to be captured by the two gill nets or the six full seine drags. Similarly all crayfish were collected via the minnow traps. As some of the fish were of such small size, it is possible some green sunfish (*Lepomis cyanellus*) were present within this tank. It was clear, however, that bluegill was the dominant fish present at this time. Given that this tank is located adjacent to Rt. 260 and in plain view of passing vehicles, it follows that Divide Tank would make an attractive stocking tank for fishermen. Bluegill is commonly used as bait in sport fishing. Some history of fish in this tank is known (Sean Blomquist pers.comm., AZGFD Tech. Report 211) with fish being noted here in 2002. Local

ranchers reported that this tank dried at some point during the summer of 2002, suggesting at least two successful fish introductions within the past two years. Divide Tank has thick grasses surrounding the waters edge but virtually no vegetation within the water itself, save for clumps of heavy green algae. The water itself is muddy with zero visibility. The surrounding terrain is heavily grazed with mainly junipers and scattered gambel oaks.

Tank Number 011

Tank Location: Easting: 444208 Northing: 3816866

Elevation: 1827 meters

Date: 8/3/03-8/4/03

Start Time: 8/3/03 11:00 AM

End Time: 8/4/03 5:00 PM

Duration: 30 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 31.2 C

Relative Humidity: 19%

Water Temperature: 30.2 C

PH: 9.68

Surface Area: 942.89 m²

Max Surface Area: 1584.80 m²

% Filled: 59.5%

Photograph #'s: 1853, 1854

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Common
Relative Abundance: 83% (10 individuals)

- 2) Common Name: Western Terrestrial Garter Snakes
Scientific Name: *Thamnophis elegans*
Absolute Abundance: Common
Relative Abundance: 17% (2 individuals)

Results/Comments: Nine larval salamanders and two garter snakes were captured within the eight minnow traps. One salamander was caught within one of the two gill nets. Nothing was captured during seining, although this is most likely due to the conditions preventing thorough seining. A dense mass of aquatic vegetation spanning the depth of the water column followed the circumference of the tank, extending from the shore five to ten feet into the water. A small vegetation-free circle of water remained in the center of the tank. This circle was the only portion of the tank conducive to seining. Tank # 011 was relatively difficult to find, requiring advanced mapping on foot to determine a feasible pathway for a 4-wheel drive vehicle. No vehicle trails leading to this tank exist, making it a less likely choice for fish stocking. The surrounding vegetation consists almost exclusively of one-seeded junipers. A cluster of coyote willows grow on the man-made berm on the south edge of the tank.

Tank Number 017

Tank Location: Easting: 446336 Northing: 3818503

Elevation: 1804 meters

Date: 5/31/03-6/1/03

Start Time: 5/31/03 4:30 PM

End Time: 6/1/03 11:00 AM

Duration: 18.5 hours

Methods: Gill nets, Minnow traps, Dip nets

Air Temperature: 34.5 C

Relative Humidity: 18%

Water Temperature: 23.4 C

PH: 8.64

Surface Area: 717.022 m²

Max Surface Area: 1476.35 m²

% Filled: 48.6%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Tiger Salamander

Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Abundant
Relative Abundance: 91.4% (64 individuals)

- 2) Common Name: Crayfish
Scientific Name: *Orconectes virilis*
Absolute Abundance: Common
Relative Abundance: 7.1% (5 individuals)
- 3) Common Name: Western Terrestrial Garter Snake
Scientific Name: *Thamnophis elegans*
Absolute Abundance: Common
Relative Abundance: 1.4% (1 individual)

Results/Comments: Thirty-nine salamanders and 3 crayfish were caught within the gill net bisecting this tank. The remaining individuals were caught via 8 evenly distributed minnow traps. A few additional individuals were captured during routine dip netting. This tank is a part of the larger Mud Tanks Draw. During periods of high rain or snow melt the tanks that make up Mud Tanks Draw are connected by water. The water within the tank was shallow (max depth: .8 meters) and muddy with poor visibility. The surrounding vegetation consisted of mainly grasses with scattered one-seeded juniper. Local ranchers reported this tank dried at some point during the summer of 2002. Of additional note, a shorthorned lizard (*Phrynosoma douglassi*) was found nearby the tank.

Tank Number 018

Tank Location: Easting: 446321 Northing: 3819039

Elevation: 1798 meters

Date: 5/31/03-6/1/03

Start Time: 5/31/03 2:00 PM

End Time: 6/1/03 4:30 PM

Duration: 26.5 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 31.9 C

Relative Humidity: 19%

Water Temperature: 28.5 C

PH: 8.95

Surface Area: 1281 m²

Max Surface Area: 1530 m²

% Filled: 83.7%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Goldfish
Scientific Name: *Carassius auratus*
Absolute Abundance: Common
Relative Abundance: 4.9% (5 individuals)

- 2) Common Name: Crayfish
Scientific Name: *Orconectes virilis*
Absolute Abundance: Abundant
Relative Abundance: 95.1% (98 individuals)

Results/Comments: All goldfish were captured with the two gill nets. Sixty-eight crayfish were caught in ten minnow traps evenly distributed around the perimeter of the tank. The remaining 30 crayfish were captured during seining. The five fish were all between eleven and twelve cm long. This tank is fed by a well defined inflow channel and overflows south eventually into Mud Tanks Draw. The water was relatively clear with some rooted aquatic vegetation around the edges. Very little algae was present at the time of the survey. The surrounding terrain is made of steep, natural hills on two sides. The third side is a man made berm, retaining the water. The surrounding vegetation is comprised of alligator junipers, one-seeded junipers and scattered pinyon pine.

Tank Number 019

Tank Location: Easting: 447193 Northing: 3819646

Elevation: 1835 meters

Date: 7/25/03-7/26/03

Start Time: 7/25/03 3:00 PM

End Time: 7/26/03 12:00 PM

Duration: 21 hours

Methods: Gill nets, Minnow traps, Dip net

Air Temperature: 33.7 C

Relative Humidity: 24%

Water Temperature: 26.5 C

PH: 8.04

Surface Area: 1069.5 m²

Max Surface Area: 1875.8 m²

% Filled: 57%

Photograph #'s: 1813, 1814

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Crayfish
Scientific Name: *Orconectes virilis*
Absolute Abundance: Abundant
Relative Abundance: 99.6% (675 individuals)

- 2) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Common
Relative Abundance: .4% (3 individuals)

Results/Comments: This tank was literally teeming with crayfish. The water was in constant motion as a result of the crayfish jockeying for position. Each one of the eight evenly distributed minnow traps was filled to capacity with crayfish. Twenty seven crayfish were caught in the two gill nets as well as three tiger salamanders, including one neotenic salamander measuring over twelve inches long. The tank and waters edge were devoid of vegetation. The water was extremely muddy with zero visibility. Tank 019 does not appear to overflow with regularity. Even if the water level were to rise above the berm, the land behind it is flat and open, decreasing the possibility of overflow further south and into another tank. The surrounding vegetation is primarily one-seeded juniper shrubs.

Tank Number 023 (Tanque Aloma)

Tank Location: Easting: 445040 Northing: 3819050

Elevation: 1811 meters

Date: 8/1/03-8/4/03

Start Time: 8/1/03 4:00 PM

End Time: 8/4/03 8:00 AM

Duration: 64 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 20.2 C

Relative Humidity: 30%

Water Temperature: 21.2

PH: 7.24

Surface Area: 451.35 m²

Max Surface Area: 3961.04 m²

% Filled: 11.4%

Photograph #'s: 1856-1858

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Crayfish
Scientific Name: *Orconectes virilis*
Absolute Abundance: Abundant
Relative Abundance: 92% (58 individuals)

- 2) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Common
Relative Abundance: 6.3% (4 individuals)

- 3) Common Name: Western Terrestrial Garter Snake
Scientific Name: *Thamnophis elegans*
Absolute Abundance: Common
Relative Abundance: 1.6% (1 individual)

Results/Comments: Very little water (.9 meters deep) remained in this tank, evidenced by the watermarks high up on the berm. During periods of high rain, what is now a grassy field, would likely turn into a fairly large ephemeral area. It was in this field that the western terrestrial garter snake was found. Thirty-Five crayfish and two tiger salamanders were captured in nine evenly distributed minnow traps. Twenty crayfish and one salamander were caught via seining and the remaining three crayfish and one salamander were collected with the gill net. Although local ranchers report that this tank dries up most years, the well-defined and vegetation-less outflow channel suggests overflow occurs with some regularity. There is very little vegetation within the tank, with tall, thick grasses lining the waters edge. Further back, the landscape is dotted with juniper and scattered gambel oak.

Tank Number 024

Tank Not Located

Tank Location: Easting: 448571 Northing: 3820364

Elevation: 1879 meters

Date: 9/29/03

Photograph #'s: 1964, 1965

Results/Comments: A 4-wheel trail passes approximately .5 miles from given UTM coordinates. From this point S. Cashins hiked the remaining distance to the tank. However, no water body is present at this location. There is a dry wash a short distance

due East of the UTM coordinates. After hiking .5 miles North as well as South of the nearby wash without finding any waterbody it was determined either there was an error with the coordinates or this tank no longer exists.

Tank Number 026

Tank Location: Easting: 448175 Northing: 3818778

Elevation: 1821 meters

Date: 6/28/03-6/29/03

Start Time: 6/28/03 11:00 AM

End Time: 6/29/03 10:00 AM

Duration: 23 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 30.1 C

Relative Humidity: 18%

Water Temperature: 21.7

PH: 8.31

Surface Area: 1607.97 m²

Max Surface Area: 3117.2 m²

% Filled: 51.6%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found:

- 1) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: common
Relative Abundance: 100% (6 individuals)

Results/Comments: This tank is within about 450 meters North of Rt. 260. Surprisingly, however, getting to the tank is rather difficult. Tank 026 is not visible from the road and a fence running along the highway further prevents easy access. A rancher expressed surprise that it was part of the survey as he believes very few locals are aware of its existence. Half of the tiger salamanders were caught in the eight evenly spaced minnow traps. The other three were caught via the gill nets. Perhaps these were among the only salamanders in the tank as seining produced no additional individuals. The vegetation surrounding the water was of a greater diversity and in more abundance than most of the other tanks included in this survey. Over two meter tall water grasses grew in strands around the periphery of the water as well as on a small island in the middle of the tank. Dense mats of rooted aquatic vegetation extended from the edge of these reeds further out

into the water. The surrounding vegetation includes alligator juniper, one-seeded juniper, gambel oak and ponderosa pine.

Tank Number 027 (Ernies Tank)

Tank Location: Easting: 449160 Northing: 3817873

Elevation: 1851 meters

Date: 9/23/03-9/24/03

Start Time: 9/23/03 11:00 AM

End Time: 9/24/03 2:00 PM

Duration: 27 hours

Methods: Gill nets, Dip nets, Minnow traps

Air Temperature: 26 C

Relative Humidity: 34%

Water Temperature: 19.5 C

PH: 7.8

Surface Area: 2783.67 m²

Max Surface Area: 3580.68 m²

% Filled: 77%

Photograph #'s: 1943

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: During a previous visit on 7/25/03, this tank was virtually dry. What water remained was completely covered with thick aquatic vegetation. Stringing nets, seining or setting traps would have been impossible. We decided to complete the survey when either the tank dried up or filled with more water. As a result of the following monsoon rains, this tank filled up quite nicely. The water level on 9/24/03 was approaching the high water marks and outflow channel. Virtually no aquatic vegetation remained and the water was quite clear with good visibility. This tank is bisected by a barbed wire fence. One gill net and five minnow traps were set on both sides of the fence and two surveyors spent one hour dip netting. No vertebrates were found during this survey.

Tank Number 028

Tank Location: Easting: 448446 Northing: 3816520

Elevation: 1765 meters

Date: 7/24/03-7/25/03

Start Time: 7/24/03 1:00 PM

End Time: 7/25/03 10:00 AM

Duration: 21 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 27.4 C

Relative Humidity: 30%

Water Temperature: 30 C

PH: 9.95

Surface Area: 783.02 m²

Max Surface Area: 1636.58 m²

% Filled: 47.8%

Photograph #'s: 1819-1824

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: The interior of this tank was thick with aquatic vegetation. It was necessary to first create vegetation-free channels in order to properly set the gill nets. The inflow channel is a large, well-defined wash and appears capable of delivering a large volume of runoff during rains and snowmelt. The tanks retaining berm, however, is large. The high water mark is only about halfway to the top of the berm, suggesting the tank has not over flown recently. Grassy fields dominate the immediate landscape. Further out, juniper and ponderosa pine are the dominant tree types. A large proportion of pines adjacent to the tank are dead and brown.

Tank Number 029 (Tin Can Tank)

Tank Location: Easting: 449643 Northing: 3815541

Elevation: 1771 meters

Date: 8/11/03-8/12/03

Start Time: 8/11/03 12:00 PM

End Time: 8/12/03 10:00 AM

Duration: 22 hours

Methods: Gill nets, Minnow traps

Air Temperature: 28.1 C

Relative Humidity: 27%

Water Temperature: 20.9 C

PH: 8.02

Surface Area: 987.7 m²

Max Surface Area: 1930.7 m²

% Filled: 51.2%

Photograph #'s: 1870-1874

Aquatic Vertebrates/Crayfish Found:

- 2) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Abundant
Relative Abundance: 100% (43 individuals)

Results/Comments: Very dense aquatic vegetation formed a ring around the deep vegetation-free pool in the center. The vegetation ring started at the shoreline and extended inwards until a depth of about 1.5 meters. At this depth, the vegetation stopped and the deep pool began. As a result, seining this tank was not possible. All salamanders were caught via the 10 minnow traps nestled within the dense aquatic vegetation. Very well defined inflow and outflow channels are evident. The high water marks are even with the position of the outflow channel, suggesting recent overflow. The surrounding area is characterized by very hilly terrain with mainly juniper (one-seeded and alligator), ponderosa pine and a few coyote willows closely associated with the tank.

Tank Number 030

Tank Not Located

Tank Location: Easting: 449423 Northing: 3815876

Elevation: 1806 meters

Date: 8/11/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. We hiked a .8 – 1.2 km radius around the coordinates and encountered no water bodies except for Tank #029

Tank Number 031 (Turkey Tank)

Tank Location: Easting: 450245 Northing: 3817957

Elevation: 1868 meters

Date: 9/23/03-9/24/03

Start Time: 9/23/03 2:00 PM

End Time: 9/24/03 11:00 PM

Duration: 21 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 23.3 C

Relative Humidity: 35%

Water Temperature: 18.5 C

PH: 6.88

Surface Area: 1224.89 m²

Max Surface Area: 2318.13 m²

% Filled: 52.8%

Photograph #'s: 1941,1942

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: During a previous on 7/24/03 this tank was almost completely dry. Similar to Tank # 027, what water remained was full of thick aquatic vegetation. During the time prior to our return on 9/23/03 the tank acquired more water. Most of the water surface area was made up of depths less than .3 meters. The depth quickly increased towards the center, ultimately reaching a depth of about 1.5 meters. It appears this tank overflows with regularity as the outflow channel is very well defined. Additionally, tree branches and wooden debris are piled in front of the outflow channel forming a dam-like structure, apparently to prevent water from escaping.

Tank Number 032 (Salmon Lake Tank)

Tank Location: Easting: 450343 Northing: 3818854

Elevation: 1916 meters

Date: 7/24/03-7/25/03

Start Time: 7/24/03 10:00 AM

End Time: 7/25/03 12:30 AM

Duration: 26.5 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 25.6 C

Relative Humidity: 36%

Water Temperature: 26.9 C

PH: 9.8

Surface Area: 220.98 m²

Max Surface Area: 876.85 m²

% Filled: 25.2%

Photograph #'s: 1796-1812

Aquatic Vertebrates/Crayfish Found:

- 3) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: common
Relative Abundance: 75% (9 individuals)

- 2) Common Name: Western Terrestrial Garter Snake
Scientific Name: *Thamnophis elegans*
Absolute Abundance: common
Relative Abundance: 25% (3 individuals)

Results/Comments: This tank was very close to drying up during the time of the survey. The max depth was only 81 cm. Six of the salamanders were caught via minnow trap, two via seine and one via gill net. Most of the tank was filled with aquatic vegetation making seining difficult. West of the tank is a large grassy field, approximately 45 meters wide by 90 meters long. It appears that any overflow from this tank would then move into this field limiting the probability of any further movement. This tank is a short distance from Rt 260 down a well-maintained dirt road. The ease of access would likely make this tank an attractive option for those looking to stock fish or crayfish.

Tank Number 034 (Petes Tank)

Tank Location: Easting: 45104 Northing: 3816882

Elevation: 1864 meters

Date: 8/5/03-8/6/03

Start Time: 8/5/03 4:00 PM

End Time: 8/6/03 10:00 AM

Duration: 18 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 28.9 C

Relative Humidity: 22%

Water Temperature: 22.9 C

PH: 10.25

Surface Area: 380.91 m²

Max Surface Area: 933.47 m²

% Filled: 40.8%

Photograph #'s: 1866, 1877

Aquatic Vertebrates/Crayfish Found:

- 4) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Abundant
Relative Abundance: 100% (53 individuals)

Results/Comments: A large number of salamanders were found from this small tank. Thirty-five were captured in the eight evenly distributed minnow traps, eighteen were caught via seining. Thick, waist high grasses grew from the waters edge and the interior water supported a number of aquatic plants. Large clumps of clear, jelly-like algae clung to the plants stems. The water was clear with visibility through to the tank floor. The surrounding vegetation consists mainly of ponderosa pine, with alligator and one-seeded junipers interspersed. A local hunter/outdoorsmen reported that this tank dries up most years.

Tank Number 035 (Soldier Mesa Tank)

Tank Location: Easting: 454728 Northing: 3818517

Elevation: 2042 meters

Date: 8/1/03-8/2/03

Start Time: 8/1/03 2:00 PM

End Time: 8/2/03 12:00 PM

Duration: 22 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 23.3 C

Relative Humidity: 40%

Water Temperature: 23.5 C

PH: 9.68

Surface Area: 441.97 m²

Max Surface Area: 921.34 m²

% Filled: 48%

Photograph #'s: 1846-1852

Aquatic Vertebrates/Crayfish Found:

- 5) Common Name: Green Sunfish
Scientific Name: *Lepomis cyanellus*
Absolute Abundance: Common
Relative Abundance: 55% (26 individuals)

- 2) Common Name: Crayfish
Scientific Name: *Orconectes virilis*
Absolute Abundance: Common
Relative Abundance: 45% (21 individuals)

Results/Comments: Sixteen green sunfish were captured in the minnow traps. Eight via seining and the remaining two with the gill net. Most of the fish were under ten cm long. Two fishes were greater than 15 cm long (see picture). All twenty-one crayfish were caught in the minnow traps. This tank was extremely muddy with no aquatic vegetation and zero visibility. The current retaining berm appears to provide a decent barrier for overflow. The high water marks, however, approach the height of the berm suggesting greater than usual rainfall could result in overflow. Ponderosa forest with juniper and gambel oaks mixed in make up the surrounding area is. A local outdoorsmen reported goldfish were present in this tank as well, although none were encountered during this survey. Reportedly, this tank rarely dries and considering Rt 260 is a short five to 10 minute four-wheel drive away it would follow that Soldier Mesa Tank is an attractive fish dumping tank.

Tank Number 036

Tank Dried

Tank Location: Easting: 455957 Northing: 3818967

Elevation: 2070 meters

Date: 6/29/03

Photograph #'s: 1794, 1795 ??

Results/Comments: This tank is visible from Rt 260 and was one of the first tanks in the area to dry during the summer of 2003. This tank remained dry for 3 subsequent visits.

Tank Number 038

Tank Not Located

Tank Location: Easting: 453926 Northing: 3816578

Elevation: 1913 meters

Date: 6/30/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. After hiking to these coordinates and the surrounding area we did not encounter any bodies of water.

Tank Number 041 (Twenty Nine Mile Lake)

Tank Location: Easting: 458637 Northing: 3814625

Elevation: 2137 meters

Date: 4/12/03-4/13/03

Start Time: 4/12/03 4:00 PM

End Time: 4/13/03 12:00 PM

Duration: 20 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 25.0 C

Relative Humidity: 22%

Water Temperature: 16.6 C

PH: 7.65

Surface Area: 1124.19 m²

Max Surface Area: NA

% Filled: NA

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found:

- 6) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Common
Relative Abundance: ~ 50% (19 individuals)

- 2) Common Name: Western Chorus Frog

Scientific Name: *Pseudacris triseriata*
Absolute Abundance: Common
Relative Abundance: ~ 50% (~20 individuals)

Results/Comments: This tank dried up following the initial visit recorded here. The twenty individual estimate of western chorus frogs was based on the number of frogs heard calling. To confirm that the calling frogs were in fact *P. triseriata*, two individuals were found and identified beneath a log. Although the habitat and conditions were not ideal for *P. triseriata* breeding, the prolonged drought and last years poor breeding had likely caused some individuals to take a chance on breeding in these less than ideal conditions. No tadpoles or egg masses were seen. The frogs that did come out were able to hide in about the only ephemeral vegetation present; short grasses, about five cm above the water extending from the waters edge to about .5 m onto the bank. The surrounding habitat is primarily ponderosa pine forest. The water itself contained many leeches, very little algal growth and was quite clear with visibility ending at around .6 m depth.

Tank Number 043 (Seven Mile Tank)

Tank Location: Easting: 456962 Northing: 3811495

Elevation: 2099 meters

Date: 4/19/03-4/20/03

Start Time: 4/19/03 5:00 PM

End Time: 4/20/03 12:00 PM

Duration: 19 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 16.9 C

Relative Humidity: 25%

Water Temperature: 15.0 C

PH: 7.73

Surface Area: 303.494 m²

Max Surface Area: 814.025 m²

% Filled: 37.3%

Photograph #'s: 1765-1767

Aquatic Vertebrates/Crayfish Found:

- 7) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Uncommon

Relative Abundance: ~20% (1 individual)

- 2) Common Name: Western Chorus Frog
Scientific Name: *Pseudacris triseriata*
Absolute Abundance: Uncommon
Relative Abundance: ~80% (~4 individuals)

Results/Comments: One tiger salamander was found in the 6 minnow traps evenly spaced around the perimeter of this small tank. Zero individuals were found using the gill net or seine. Approximately four chorus frogs were heard calling, though none were actually seen. Neither tadpoles nor egg masses were found either. Although this tank is small, at no point within three subsequent visits between April and August did this tank dry up. This tank is within easy access to nearby Rt 87 making it a potentially attractive water body for dumping fish or crayfish. The surrounding vegetation is primarily Ponderosa Pine forest, with scattered gambel oak, alligator juniper and greenleaf manzanita

Tank Number 046

Tank Location: Easting: 456231 Northing: 3811219

Elevation: 2098 meters

Date: 4/19/03-4/20/03

Start Time: 4/19/03 3:00 PM

End Time: 4/20/03 3:00 PM

Duration: 24 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 18.2 C

Relative Humidity: 25%

Water Temperature: 17.0 C

PH: 8.16

Surface Area: 479.961 m²

Max Surface Area: 830.520 m²

% Filled: 57.8%

Photograph #'s: 1768, 1769

Aquatic Vertebrates/Crayfish Found:

- 8) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*

Absolute Abundance: Uncommon
Relative Abundance: ~38% (3 individuals)

- 2) Common Name: Western Chorus Frog
Scientific Name: *Psuedacris triseriata*
Absolute Abundance: Uncommon
Relative Abundance: ~63% (~5 individual)

Results/Comments: The estimated number of chorus frogs was based on their calling and not on actual collection. One chorus frog was found to confirm that the frogs calling were in fact *P. triseriata*. Three tiger salamanders were captured within the gill net bisecting the tank. No vertebrates were captured in any of the ten minnow traps distributed evenly about the waters edge or during seining. The depth of the water was fairly uniform across the tank with a maximum depth of 1.3 meters and was quite clear with a visibility of over .5 meters. This tank is within 100 meters of Rt 187 making it a potentially inviting location for fish or crayfish stocking. Of note is the position of the outflow channel below the high water markings, suggesting frequent overflow, with the water moving straight into the dense Ponderosa Pine forest. The absence of a distinct wash channeling this water suggests the overflow may simply disperse into the forest soil.

Number 051

Fossil Creek

Location: Easting: 443767 Northing: 3807175

Elevation: 1174 meters

Date: 8/30/03

Photograph #'s: NA

Results/Comments: The water body corresponding to these coordinates is a section of Fossil Creek.

Tank Number 052

No Tank

Tank Location: Easting: 443980 Northing: 3807395

Elevation: 1170 meters

Date: 8/30/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. After hiking to these coordinates and the surrounding area we did not encounter any bodies of water. The location indicated by the coordinates is on the side of a very steep incline approximately 60 meters South of the road to the Irving and Childs power plants. There is no indication of a past or present body of water in the vicinity of these coordinates.

Tank Number 053

No Tank

Tank Location: Easting: 444522 Northing: 3807479

Elevation: 1261 meters

Date: 8/30/03

Photograph #'s: 1914, 1915

Results/Comments: There is no water body at the listed UTM coordinates. After hiking to these coordinates and the surrounding area the only body of water we found was a very small spring creating not even a trickle of water. Instead, the presumed spring supports a lush complement of vegetation on the surface. This area is located approximately 70 meters East of the road to the Irving and Childs power plants on the slope of the Fossil Canyon.

Number 054

Fossil Creek

Location: Easting: 447285 Northing: 3809250

Elevation: 1316 meters

Date: 8/30/03

Photograph #'s: NA

Results/Comments: The water body corresponding to these coordinates is a section of Fossil Creek.

Tank Number 055

Tank Not Located

Tank Location: Easting: 447167 Northing: 3808552

Elevation: 1422 meters

Date: 6/30/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. After hiking to these coordinates and the surrounding area we did not encounter any bodies of water. These coordinates correspond to a point West of the hiking trail to the springs of Fossil Creek

Tank Number 057

Tank Not Located

Tank Location: Easting: 448687 Northing: 3811889

Elevation: 1750 meters

Date: 8/12/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. After hiking to these coordinates and the surrounding area we did not encounter any bodies of water. These coordinates correspond to a point on the side of an extremely steep hill. Verma Miera, a former Arizona Game and Fish Department employee reported she tried to locate this tank once before and was unsuccessful as well. It appears this tank no longer exists.

Tank Number 058

Tank Location: Easting: 448249 Northing: 3812404

Elevation: 1731 meters

Date: 8/12/03-8/13/03

Start Time: 8/12/03 12:00 PM

End Time: 8/13/03 9:00 AM

Duration: 22 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 30.6 C

Relative Humidity: 26%

Water Temperature: 22.3 C

PH: 10.45

Surface Area: 865.71 m²

Max Surface Area: 2211.31 m²

% Filled: 39.1%

Photograph #'s: 1880

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: Two hunters that frequent this area, reported this tank dried at some point during the summer of 2002. Seining, two gill nets and nine evenly distributed minnow traps captured zero aquatic vertebrates. Surprisingly, very few invertebrates besides leeches were making use of this tank either. The water was very still and extremely clear with visibility clear to the tank bottom allowing a great opportunity for observations. However, there was virtually zero activity of any sort to observe. This tank is beautifully located on the edge of the rim overlooking Fossil Canyon. The surrounding vegetation is principally juniper (alligator, one-seeded and utah varieties) with coyote willow and shrub live oak associated with the water. Single leaf pinyon dot the landscape. During a previous visit earlier in the summer this tank held more water but was in no immediate danger of reaching capacity.

Number 062

Fossil Creek

Location: Easting: 439506 Northing: 3803118

Elevation: 992 meters

Date: 10/11/03

Photograph #'s: NA

Results/Comments: The water body corresponding to these coordinates is a section of Fossil Creek.

Tank Number 064

Tank Location: Easting: 0437532 Northing: 3804878

Elevation: 1435 meters

Date: 11/10/03-11/11/03

Start Time: 11/10/03 1:00 PM

End Time: 11/11/03 12:00 PM

Duration: 23 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 21.1 C

Relative Humidity: 24%

Water Temperature: 10.7 C

PH: 8.5

Surface Area: 534.44 m²

Max Surface Area: 885.25 m²

% Filled: 60.4%

Photograph #'s: 1972-1979

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: This is a difficult tank to access making it a less likely direct fish stocking site. Although there is a four-wheel drive road to the tank it is very steep and difficult to maneuver. Additionally, before even getting to this road it is necessary to descend into Fossil Canyon either via 703 from Strawberry or 708 just out of Camp Verde. No vertebrates were captured during seining or within the two gill nets and eight minnow traps evenly distributed within the tank. A pair of javelina though, did visit the tank in the morning for a drink of water and a roll in the mud. This tank is located on the slope of a relatively steep hill. The surrounding vegetation is primarily juniper with scattered pinyon pine. shrub-live oak surround the tank and paddle cactus, yucca, and barrel cactus dot the landscape.

Number 065

Fossil Creek

Location: Easting: 439666 Northing: 3805305

Elevation: 1042 meters

Date: 10/9/03

Photograph #'s: NA

Results/Comments: The water body corresponding to these coordinates is a section of Fossil Creek.

Tank Number 070

Tank Not Located

Tank Location: Easting: 441153 Northing: 3807277

Elevation: 1326 meters

Date: 10/9/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. After hiking to these coordinates and the surrounding area we did not encounter any bodies of water. It is probable that the given coordinates correspond to Daveys Tank (Easting: 441318 Northing: 3807094) which we observed as dry.

Tank Number 071 (Eds Point Spring Tank)

Tank Location: Easting: 441364 Northing: 3807259

Elevation: 1309 meters

Date: 10/9/03-10/10/03

Start Time: 10/9/03 12:00 PM

End Time: 10/10/03 10:00 AM

Duration: 22 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 20 C

Relative Humidity: 23%

Water Temperature: 15.4 C

PH: NA

Surface Area: NA

Max Surface Area: NA

% Filled: ~50%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: The pH monitor needed calibration and could not be used during this survey. No vertebrates were found, however, with seining, gill net and ten minnow traps. Sean Blomquist (AZGFD Tech. Rep. 211) reported this tank dried in 2002. From the road the tank is about a 30 minute hike down steep terrain making it a difficult location to carry supplies in and out of. From a visual inspection, the water level was about half way down from the high water marks.

Tank Number 072 (Sheep Coral Tank)

Tank Location: Easting: 441494 Northing: 3808344

Elevation: 1402 meters

Date: 10/9/03-10/10/03

Start Time: 10/9/03 4:00 PM

End Time: 10/10/03 2:30 PM

Duration: 22.5 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 20 C

Relative Humidity: 23%

Water Temperature: 18.2 C

PH: NA

Surface Area: NA

Max Surface Area: NA

% Filled: ~25%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: Very little water remained at the time of the survey (max depth .5 meters). Sean Blomquist (AZGFD Tech. Rep. 211) reported this tank dried during the summer of 2002 and the aerial survey conducted on June 27, 2002 reported this tank contained very little water. Not surprisingly, the seining, eight minnow traps and one gill net captured zero aquatic vertebrates or crayfish. If there ever have been fish populations here in the past they would not have been able to survey last summer and this summers drying. Very little aquatic vegetation was within the tank and the remaining water was quite clear with visibility through to the tank bottom.

Tank Number 079

Tank Location: Easting: 435139 Northing: 3808384

Elevation: 1403 meters

Date: 11/12/03-11/13/03

Start Time: 11/12/03 3:30 PM

End Time: 11/13/03 12:00 PM

Duration: 20.5 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 18.9 C

Relative Humidity: 25%

Water Temperature: 10.4 C

PH: 8.8

Surface Area: 534.44 m²

Max Surface Area: 885.25 m²

% Filled: 60.4%

Photograph #'s: 1972-1979

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: This tank is highly inaccessible. Only the most dedicated of people would venture to this tank. It is located on the side of a relatively steep incline. The berm, however, is large and appears adequate to hold typical rainfall/snowmelt. The high water mark was approximately halfway up the berm and the current water level was only 60% of the high water mark. There was very little aquatic vegetation and the visibility within the tank was about 15 cm. The surrounding vegetation is primarily juniper shrubs (Utah and one-seeded) and pinyon pine. Within the wash area shrublive-oak are abundant as are paddle cactus throughout the landscape.

Tank Number 081

Tank Not Located

Tank Location: Easting: 443337 Northing: 3811725

Elevation: 1729 meters

Date: 8/26/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. After hiking to these coordinates and the surrounding area we did not encounter any bodies of water.

Tank Number 082 (Pine Tank)

Tank Location: Easting: 444038 Northing: 3812576

Elevation: 1747 meters

Date: 8/25/03-8/26/03

Start Time: 8/25/03 12:00 PM

End Time: 8/26/03 2:00 PM

Duration: 26 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 25.6 C

Relative Humidity: 43%

Water Temperature: 24.3 C

PH: 7.3

Surface Area: 2709.99 m²

Max Surface Area: 3072.26 m²

% Filled: 88.2%

Photograph #'s: 1905, 1906

Aquatic Vertebrates/Crayfish Found:

- 9) Common Name: Black-necked Garter Snake
Scientific Name: *Thamnophis cyrtopsis*
Absolute Abundance: Uncommon
Relative Abundance: 100% (1 individual)

Results/Comments: Tank # 082 is larger than most of the other tanks within the Fossil Creek drainage surveyed here. The depth across the tank is fairly uniform with a max depth of about one meter. The well-defined outflow channels and low position in relation to the retaining berm suggests this tank overflows regularly. Three gill nets and twelve minnow traps were positioned evenly throughout the tank. No vertebrates or crayfish were caught with either of these methods. Following approximately a dozen seine hauls it was determined only insects occupied this tank. Sean Blomquist (AZGFD Tech. Rep. 211) also reported no vertebrates or crayfish at this tank in 2002. A Black-necked Garter Snake was caught alongside the tank foraging.

Tank Number 083 (Walts Tank)

Tank Location: Easting: 441391 Northing: 3812930

Elevation: 1697 meters

Date: 8/5/03

Start Time: 8/5/03 12:00 PM

End Time: 8/5/03 2:00 PM

Duration: 2 hours

Method: Seine

Air Temperature: 32.3 C

Relative Humidity: 19%

Water Temperature: 28.9 C

PH: 10.10

Surface Area: 1387.88 m²

Max Surface Area: 2488.77 m²

% Filled: 55.8%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found:

- 10) Common Name: Western Terrestrial Garter Snake
Scientific Name: *Thamnophis elegans*
Absolute Abundance: Common
Relative Abundance: 100% (1 individual)

Results/Comments: This tank is current Chiricahua Leopard Frog (*Rana chiricahuensis*) habitat, a federally listed endangered species. Although none of these frogs were seen we were concerned that unattended gill nets and minnow traps could harm these leopard frogs. We, therefore, did not employ these sampling methods at this tank.

Approximately two hours of seining produced no aquatic vertebrates or crayfish. Due to this tanks' status as one of only a handful of chiricahua leopard frog populations in the region, the Arizona Game and Fish Department closely monitor this tank. From them, it is known that this tank dried during the summer of 2002. This lack of water posed a threat to the persistence of *R. chiricahuensis*. To prevent drying from happening again the tank was renovated with the goal of improving its ability to hold water. Among other measures, earth was moved to increase the size of the berm. Signs have been posted prohibiting the introduction of wildlife. Sean Blomquist (AZGFD Tech. Rep. 211) reported finding only chiricahua leopard frogs and garter snakes during surveys conducted throughout 2002. From this evidence, and considering the sensitivity of these frogs to introduced species, we feel it is safe to conclude that non-native fish or crayfish are not present at this site. Most of the tank is vegetation-less except the periphery, which has short grasses growing out of the water. The surrounding vegetation is almost exclusively juniper (mostly one-seeded and Utah) with some short pinyon, paddle cactus and shrublive-oak associated with the dry wash.

Tank Number 085

Tank Location: Easting: 442670 Northing: 3814810

Elevation:

Date: 9/28/03-9/29/03

Start Time: 9/28/03 2:00 PM

End Time: 9/29/03 11:00 AM

Duration: 21 hours

Methods: Seine, Gill nets, Minnow traps

Air Temperature: 32 C

Relative Humidity: 19%

Water Temperature: 19.9 C

PH: 9.5

Surface Area: 1098.31 m²

Max Surface Area: 2351.85 m²

% Filled: 46.7%

Photograph #'s: 1961-1963

Aquatic Vertebrates/Crayfish Found:

- 11) Common Name: Green Sunfish
Scientific Name: *Lepomis cyanellus*
Absolute Abundance: Abundant
Relative Abundance: 98% (60 individuals)

- 2) Common Name: Southern Plateau Eastern Fence Lizard
Scientific Name: *Scleropus undulatus*
Absolute Abundance: Uncommon
Relative Abundance: 2% (1 individual)

Results/Comments: No vegetation in the water or near the waters edge. This tank is quite muddy with low visibility. Twenty-six fish were caught within the minnow traps, thirty-two during seining and two were captured in the gill nets. There was a large number of smaller fish observed at night near the waters edge that were apparently too small to become caught in the minnow traps and in the morning became the breakfast of a hungry great blue heron. This tank is created by a large berm within a sharply inclined wash. The outflow channel from this tank appears to carry water often in spite of the large berm created to prevent this from occurring.

Tank Number 086 (Antelope Tank)

Tank Location: Easting: 443684 Northing: 3814457

Elevation: 1764 meters

Date: 10/1/03-10/2/03

Start Time: 10/1/03 4:00 PM

End Time: 10/2/03 11:00 AM

Duration: 19 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 28 C

Relative Humidity: 20%

Water Temperature: 21 C

PH: 9.6

Surface Area: NA

Max Surface Area: NA

% Filled: ~50%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: This tank is fairly difficult to access, requiring a 30 – 40 minute hike to get in. Maps show an access road passing close to the tank. It would appear, however, that this road no longer exists. This tank was approximately half full compared to the high water marks. In the water there was very little aquatic vegetation. The surrounding vegetation consists mainly of junipers with scattered gambel oak. Sean Blomquist (AZGFD Tech. Rep. 211) also reported no vertebrates or crayfish at this location.

Tank Number 087

Tank Location: Easting: 442740 Northing: 3813698

Elevation: 1703

Date: 8/6/03-8/7/03

Start Time: 8/6/03 11:00 AM

End Time: 8/7/03 1:00 PM

Duration: 26 hours

Methods: Seine, Gill net, Minnow traps

Air Temperature: 30.4 C

Relative Humidity: 22%

Water Temperature: 25 C

PH: 10.10

Surface Area: 550.46 m²

Max Surface Area: 1754.69 m²

% Filled: 31.4%

Photograph #'s: NA

Aquatic Vertebrates/Crayfish Found:

- 12) Common Name: Green Sunfish
Scientific Name: *Lepomis cyanellus*
Absolute Abundance: Abundant
Relative Abundance: 100% (67 individuals)

Results/Comments: This tank is enclosed by a cattle fence and is, in fact, the water source for a cattle holding pen. No small vegetation exists within the pen due to the cattle. The ground is packed dirt and the bank of the tank is trampled mud. The water itself is extremely muddy with a fair amount of algae. A dark green "bubbly" alga floated on the surface and a fluorescent green filamentous variety thrived underneath. Forty-five fish were caught via minnow traps, the remaining were captured during seining. Similar to tank # 085 hundreds of fish too small for the minnow traps and seine were observed in the shallow water near the bank. It was difficult to determine exactly where the high water mark was due to the extreme ground trampling by cattle. Regardless, it appears the overflow channel empties into a large field, perhaps limiting the probability of water from this tank traveling much further south.

Tank Number UM001

Tank Location: Easting: 456816 Northing: 3812268

Elevation: 2097 meters

Date: 9/30/03-10/1/03

Start Time: 9/30/03 4:00 PM

End Time: 10/1/03 10:30 AM

Duration: 18.5 hours

Methods: Gill net, Dip net, Minnow traps

Air Temperature: 23.1 C

Relative Humidity: 23%

Water Temperature: 18.1 C

PH: 7.3

Surface Area: 197.61 m²

Max Surface Area: 282.30 m²

% Filled: 70%

Photograph #'s: 1969-1971

Aquatic Vertebrates/Crayfish Found:

- 13) Common Name: Mountain Treefro
Scientific Name: *Hyla Eximia*
Absolute Abundance: Common
Relative Abundance: 73% (8 individuals)

- 2) Common Name: Tiger Salamander
Scientific Name: *Ambystoma tigrinum*
Absolute Abundance: Common
Relative Abundance: 27% (3 individuals)

Results/Comments: This is a very small tank with a wide diversity of aquatic vegetation, including water grasses, water lily, algae and thick masses of subsurface plants. Eight mountain treefrogs were found in various stages of metamorphosis in the short grassy bank adjacent to the water. Three tiger salamanders were collected in the seven minnow traps distributed within the tank. This tank is directly adjacent to well-used Forest Service road 609 and campsites. The two overflow channels form on either side of the retaining berm and would disperse water into the forest during periods of high rain. The surrounding area is pine forest with mixed in oak trees.

Tank Number UM002

Tank Location: Easting: 457659 Northing: 3816309

Elevation: 2143 meters

Date: 9/30/03-10/1/03

Start Time: 9/30/03 2:00 PM

End Time: 10/1/03 1:00 PM

Duration: 23 hours

Methods: Seine, Minnow traps

Air Temperature: 22 C

Relative Humidity: 23%

Water Temperature: 18 C

PH: NA

Surface Area: 183.413 m²

Max Surface Area: 456.183 m²

% Filled: 40.2%

Photograph #'s: 1968

Aquatic Vertebrates/Crayfish Found: None

Results/Comments: There was not much water at this tank. The water, however, was clear with visibility down to about .5 meter. There were many invertebrates present but no vertebrates or crayfish were caught during seining or within the minnow traps. The retaining wall of this tank was built up much higher than necessary as the outflow water channel simply formed around the berm at a point not even one third of its total height. The area around the tank is comprised of low grasses in an otherwise pine forest with oaks mixed in. A dirt bike trail with ramps has been formed in the vicinity.

Tank Number UM005

Tank Not Located

Tank Location: Easting: 444394 Northing: 3816988

Elevation: 1729 meters

Date: 9/29/03

Photograph #'s: NA

Results/Comments: There is no water body at the listed UTM coordinates. This tank should be very close to Tank # 011. However, after visiting Tank # 011 we hiked to these coordinates and the surrounding area but did not encounter any bodies of water.